CLAIM AMENDMENTS:

Claim 1 (Currently Amended): A front-opening unified pod auto-loading structure adapted to load a FOUP (front-opening unified pod), comprising:

a machine base, having a backboard with an upper access, a table disposed at a middle of said backboard, and a base disposed at a bottom of said backboard;

a carrier supported by said table and adapted to carry said FOUP, said carrier having an elongated opening close by the backboard and a detecting pin close by a center thereof for detecting if the FOUP is positioned accurately;

a detector mounted on a back of said backboard above said access and adapted to detect protrusive wafers in the FOUP on said carrier;

a sliding control mechanism mounted on said table to support said carrier and control movement of said carrier toward or away from said access;

a latch below said carrier, having a rail fixedly fastened on a bottom of said carrier, a threaded rod disposed in parallel to the rail of said latch, a sliding pad threaded onto the threaded rod of said latch and adapted to slide along the rail of said latch, a motor adapted to rotate the threaded rod of said latch clockwise/counter-clockwise so as to make the sliding pad slide, and a locking plate fixedly mounted on the sliding pad of said latch and adapted to latch the FOUP on the carrier ~~y~~ by inserting through the elongated opening of said carrier and moving with the sliding pad of said latch to a retaining portion of the carrier;

a horizontal shifting mechanism, having a rail fixedly mounted on the base of said machine base, a horizontal threaded rod disposed in parallel to the rail of said horizontal shifting mechanism, a platform threaded onto the threaded rod of said horizontal shifting mechanism, and a motor to drive and control the platform to move horizontally along the rail of said horizontal shifting mechanism when rotating the threaded rod of said horizontal shifting mechanism clockwise/counter-clockwise, thereby moving said platform horizontally along the rail of said horizontal shifting mechanism toward/away from the backboard of said machine base; ~~and~~

a lifting mechanism, having a motor and a threaded rod and slider set vertically mounted on the platform of said horizontal shifting mechanism, said threaded rod and slider set having a vertical rail, a threaded rod longitudinally mounted in said vertical rail, and a sliding pad threaded onto the threaded rod of said lifting mechanism and moved along said vertical rail upon rotation of the threaded rod of said lifting mechanism; and

a headstock gear moved with the sliding pad of said lifting mechanism and controlled to close/open a cover of the FOUP on said carrier, said headstock gear comprising:

a gate to move in and out of the access of said backboard of said machine base, said gate having two through-hole portions;

two racks respectively fixedly fastened on a surface of said gate that does not contact the FOUP;

two support arms respectively extended from said racks and connected to the sliding pad of said lifting mechanism; and

a driving unit mounted above the two racks and controlled to close/open the cover of the FOUP on said carrier, said driving unit having a transmission shaft, a motor controlled to rotate said transmission shaft, two rotary bolts respectively coupled to said transmission shaft and inserted through the through-hole portions of said gate for engaging into locking-hole portions formed in the cover of the FOUP and rotating with said transmission shaft to thus close/open the cover of the FOUP on said carrier.

Claims 2-3 (Canceled).

Claim 4 (Previously Presented): The front-opening unified pod auto-loading structure as claimed in claim 1, wherein said sliding control mechanism has a rail, a threaded rod disposed in parallel to the rail of said sliding control mechanism, a sliding pad threaded onto the threaded rod of said sliding control mechanism and fastened to a bottom sidewall of said carrier and adapted to move said carrier along the rail of said sliding control mechanism upon rotation of the threaded rod of said sliding control mechanism, and a motor controlled to rotate the threaded rod of said sliding control mechanism.

Claim 5 (Previously Presented): The front-opening unified pod auto-loading structure as claimed in claim 1, wherein said carrier has a round opening; further comprising a locking bolt inserted in the round opening and being driven by a motor to thus lock the FOUP on said carrier.

Claim 6 (Currently Amended): The front-opening unified pod auto-loading structure as claimed in claim 1, wherein said carrier has ~~has~~ a plurality of positioning rods for engaging into respective positioning grooves on the FOUP to hold the FOUP in position.

Claim 7 (Previously Presented): The front-opening unified pod auto-loading structure as claimed in claim 1, wherein said carrier has a plurality of detecting pins for detecting a manufacturing process stage.

Claim 8 (Currently Amended): ~~The front-opening unified pod auto-loading structure as claimed in claim 1~~, A front-opening unified pod auto-loading structure adapted to load a FOUP (front-opening unified pod), comprising:

a machine base, having a backboard with an upper access, a table disposed at a middle of said backboard, and a base disposed at a bottom of said backboard;

a carrier supported by said table and adapted to carry said FOUP, said carrier having an elongated opening close by the backboard and a detecting pin close by a center thereof for detecting if the FOUP is positioned accurately;

a detector mounted on a back of said backboard above said access and adapted to detect protrusive wafers in the FOUP on said carrier;

a sliding control mechanism mounted on said table to support said carrier and control movement of said carrier toward or away from said access;

a latch below said carrier, having a rail fixedly fastened on a bottom of said carrier, a threaded rod disposed in parallel to the rail of said latch, a sliding pad threaded onto the threaded rod of said latch and adapted to slide along the rail of said latch, a motor adapted to rotate the threaded rod of said latch clockwise/counter-clockwise so as to make the sliding pad slide, and a locking plate fixedly mounted on the sliding pad of said latch and adapted to latch the FOUP on the carrier by inserting through the elongated opening of said carrier and moving with the sliding pad of said latch to a retaining portion of the carrier;

a horizontal shifting mechanism, having a rail fixedly mounted on the base of said machine base, a horizontal threaded rod disposed in parallel to the rail of said horizontal shifting mechanism, a platform threaded onto the threaded rod of said horizontal shifting mechanism, and a motor to drive and control the platform to move horizontally along the rail of said horizontal shifting mechanism when rotating the threaded rod of said horizontal shifting mechanism clockwise/counter-clockwise, thereby moving said platform horizontally along the

rail of said horizontal shifting mechanism toward/away from the backboard of said machine base; and

a lifting mechanism, having a motor and a threaded rod and slider set vertically mounted on the platform of said horizontal shifting mechanism, said threaded rod and slider set having a vertical rail, a threaded rod longitudinally mounted in said vertical rail, and a sliding pad threaded onto the threaded rod of said lifting mechanism and moved along said vertical rail upon rotation of the threaded rod of said lifting mechanism;

wherein said carrier has a plurality of detecting pins for detecting a type of the FOUP thereon.

Claim 9 (Currently Amended): ~~The front-opening unified pod auto-loading structure as claimed in claim 1,~~ A front-opening unified pod auto-loading structure adapted to load a FOUP (front-opening unified pod), comprising:

a machine base, having a backboard with an upper access, a table disposed at a middle of said backboard, and a base disposed at a bottom of said backboard;

a carrier supported by said table and adapted to carry said FOUP, said carrier having an elongated opening close by the backboard and a detecting pin close by a center thereof for detecting if the FOUP is positioned accurately;

a detector mounted on a back of said backboard above said access and adapted to detect protrusive wafers in the FOUP on said carrier;

a sliding control mechanism mounted on said table to support said carrier and control movement of said carrier toward or away from said access;

a latch below said carrier, having a rail fixedly fastened on a bottom of said carrier, a threaded rod disposed in parallel to the rail of said latch, a sliding pad threaded onto the threaded rod of said latch and adapted to slide along the rail of said latch, a motor adapted to rotate the threaded rod of said latch clockwise/counter-clockwise so as to make the sliding pad slide, and a locking plate fixedly mounted on the sliding pad of said latch and adapted to latch the FOUP on the carrier by inserting through the elongated opening of said carrier and moving with the sliding pad of said latch to a retaining portion of the carrier;

a horizontal shifting mechanism, having a rail fixedly mounted on the base of said machine base, a horizontal threaded rod disposed in parallel to the rail of said horizontal shifting mechanism, a platform threaded onto the threaded rod of said horizontal shifting mechanism, and a motor to drive and control the platform to move horizontally along the rail of said horizontal shifting mechanism when rotating the threaded rod of said horizontal shifting mechanism clockwise/counter-clockwise, thereby moving said platform horizontally along the rail of said horizontal shifting mechanism toward/away from the backboard of said machine base; and

a lifting mechanism, having a motor and a threaded rod and slider set vertically mounted on the platform of said horizontal shifting mechanism, said threaded rod and slider set having a vertical rail, a threaded rod longitudinally

mounted in said vertical rail, and a sliding pad threaded onto the threaded rod of said lifting mechanism and moved along said vertical rail upon rotation of the threaded rod of said lifting mechanism;

wherein said backboard of said machine base has two parallel sliding slots longitudinally extended below said table.

Claim 10 (Previously Presented): The front-opening unified pod auto-loading structure as claimed in claim 1, wherein said backboard has a gasket mounted on edges of said access facing the FOUP.

Claim 11 (Currently Amended): The front-opening unified pod auto-loading structure as claimed in claim 1 ~~3~~, wherein said gate has a gasket mounted on edges of a surface thereof that does not contact the FOUP.

Claim 12 (Currently Amended): The front-opening unified pod auto-loading structure as claimed in claim 1 ~~3~~, wherein said gate has a plurality of positioning pins to engage respective positioning recesses on the cover of the FOUP on said carrier.

Claim 13 (Previously Presented): The front-opening unified pod auto-loading structure as claimed in claim 1, wherein said locking plate of said latch has at least one roller disposed at top thereof.

Claim 14 (Previously Presented): The front-opening unified pod auto-loading structure as claimed in claim 1, wherein said backboard of said machine base has two guide-hole portions, and said vertical rail of said lifting mechanism has two guide rods backwardly extended to be respectively inserted through the guide-hole portions of said backboard of said machine base for guiding a horizontal movement of said lifting mechanism with said horizontal shifting mechanism.

Claim 15 (Previously Presented): The front-opening unified pod auto-loading structure as claimed in claim 1, further comprising limit switches to respectively control clockwise and counter-clockwise rotation of the motors of said latch, said horizontal shifting mechanism and said lifting mechanism.

Claim 16 (Currently Amended): The front-opening unified pod auto-loading structure as claimed in claim 1 ~~3~~, wherein the head stock gear has detectors mounted on top of said gate and adapted to detect a wafer number and position in the FOUP on said carrier.

Claim 17 (Canceled).